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in such simple form that they could be readily remembered. Not one in fifty knows these elementary facts. If this exposition is to have the educative value that it is hoped, it must be largely by providing important information in simple form, for no one can remember the endless data and statistics which are here provided, and if they could, the one most important fact of all, that we are fast approaching an utter destruction of our forests, is nowhere mentioned."

"The trouble is just here," quoth the lumberman, "everybody has got to look out for himself, and what's everybody's business is nobody's business, you know. And then some of those fellers that took up tree claims out west, well, I've known 'em many a time to plant their trees and get their land, and then let 'em all die, or sometimes even root 'em up," he added with an amused smile, as if he found the whole matter rather a good joke. "You see, most folks don't look at it as you do; twenty-five years ahead is a long time; we shan't feel the pinch much before that, and then—well"—then, we mentally continued, when, like Samson, our strength has been shorn from us, when our hills are as barren as those of Palestine, and our rivers can no longer turn the factory wheels, when our population has doubled, and the price of wood sextupled, then our children, waiting for a hundred years, and toiling with infinite cost and pains to replace what we have destroyed, may well say, "Thus are the sins of the fathers visited upon the children even unto the third and fourth generations." And Mr. ——— smiled courteously, and said he should think it would be a good plan if something could be done about it.

LUCIA TRUE AMES.

Boston, Mass

THE USES OF THE LITTER BY SPARROWS.

[Editor *Science*: The following incident observed by my step-son, twelve years old, may be of interest in connection with the mooted question regarding the use of tools, utensils and weapons by the lower animals.

MERWIN-MARIE SNELL.]

A few days ago, as I was walking along the street near

a little park, I saw a sparrow lying upon the ground. It fluttered its wings, but was unable to rise.

As I was looking, a pair of old birds came along carrying between them a little bare twig about three inches long. One had hold of one end of it, and its companion had hold of the other. They brought it down to the bird on the ground, and it caught hold of the stick with its beak.

Then they flew up again into a tree, carrying the third bird hanging to the stick, and by this means brought it to a place of safety.

I am not sure that the bird on the ground was a young one; it looked quite large and may have been wounded or sick. It was not able to fly, anyway, for I saw it try to do so without success. All the birds were common English sparrows.

E. STANLEY SPRAGUE.

Chicago, Ill., Aug. 7, 1893.

SPACE RELATION OF NUMBERS.

MR. MARTIN'S association of the natural series of numbers with a diagram in space is by no means unusual. As I have a similar association myself I have been interested in the accounts published from time to time by people, most of whom imagine their experiences to be unique. There must by this time be quite a literature of the subject, though I do not know whether any one has kept track of it. I should say, however, that most persons having a strong sense of locality would be apt to associate, not only the series of numbers but also any other series, such as the months of the year or the days of the week, with a space diagram. In my own case the natural numbers begin at my left hand quite close to me and run in a straight line diagonally in perspective into the distance towards the right. Beyond one hundred I can scarcely see them, however. The months of the year are similarly arranged save that the current month is always close to me. Most other series have some sort of space arrangement, the kings of England, for instance, beginning at a distance, and running in a very eccentric curved and zizzag line, finishing near me. I localize almost everything I memorize or think of deeply.

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Two localities in particular are associated respectively with the freedom of the will and generalized space, and whenever I think of one of these subjects the corresponding place, with surrounding buildings and scenery, is always vividly present. Of course this is mere association of ideas, but the localization of a numerical series is doubtless nothing more, and I can see no analogy between it and the phenomena of color-hearing, etc., which seem to have for a basis an actual stimulation of two senses by the causes that usually affect only one—probably a purely physiological phenomenon.

It is not necessary to suppose any material basis for the diagram. I used to think that mine arose from my learning my numbers from a set of blocks, which I placed in a row. It seems just as likely, however, that the diagram was wholly imagined, it being easier to remember the numbers when associated with a position in space. It seems likely that many people have these diagrams who do not realize it; I was not always aware of mine till they had been firmly fixed in my mind for many years.

ARTHUR E. BOSTWICK.

Office of The Standard Dictionary, 2 Clinton Hall, Astor Place, N. Y. City.

ROUND WORMS IN THE BRAINS OF BIRDS.

In reference to the note by Professor G. H. French, in *Science* for June 2, it may be said that many years ago the late Professor Nyman published an article in the Proceedings of the Boston Society of Natural History on a nematoid parasite which lives coiled up in the brain of the anthinga or snake-bird in Florida. The species is *Eustrongylus papillosus* of Diesing. Afterwards, in the Bulletin or Report of Hayden's Geological Survey of the Territories, the volume and year not in my mind at this writing, I described and figured a similar species (*Eustrongylus buteonis*) which was found by a student of mine living under the eyes of *Buteo swainsoni*, while another species (*Eustrongylus chordeilis*, Pack.) was removed

from the brain of the night-hawk. These are all referred to in my text book of Zoölogy, p. 169. A. S. PACKARD.

SHARKS IN FRESH WATER.

I HAVE twice noticed extended and circumstantial accounts of the existence, and in great abundance, of genuine sharks in the fresh-water lake of Nicaragua. Though the first account, according to my recollection, appeared in a very reputable publication, I was inclined to think, from the novelty of the idea, that it was merely an invention of some writer who was amusing himself, and filling out an article, but seeing another account by another writer, and even more circumstantial than the first account, I cannot doubt that there is some basis for the statement. If any readers of *Science* know of the occurrence of genuine sharks in fresh water, and especially in the case of the lake above mentioned, I should be glad to have a report to *Science*.

In conversation the other day with one who is a good deal of an authority in such matters, I found that he had no knowledge of any occurrence of sharks in fresh water, but saw nothing unreasonable in the idea. C. H. AMES.

5 Somerset Street, Boston, Mass.

THE many friends of Henry de Varigny, Sc. D., of Paris, France, will be glad to know that he is on the way to this country, having sailed on Aug. 23, being sent by the French government to investigate certain questions connected with the fisheries and applied entomology.

—Corrections: In the letter by Joseph C. Thomson, not Joseph W. Thompson, on page 97, for "innovated" read "innervated."

—Charles Scribner's Sons have just ready a little volume of "Stories of the Sea" to match the "Stories of the South," "Stories of New York" and "Stories of the Railway," already published.

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"The Conchologist: a Journal of Malacology," Vols. 1 and 2, with wood cuts and plates, value 12—will exchange for any works or pamphlets on American Slugs or Anatomy of American Fishes. W. E. Collinge, Mason College, Birmingham, England.

I wish to exchange a New Model Hall Typewriter, price \$30, for a Daylight Kodak, 4x5 preferred. George A. Coleman, Dep't. Agric., Div. of Ornithology, Washington, D. C.

Exchange—The undersigned is desirous of obtaining correspondents interested in macro-lipidoptera, in Alaska, the far Western, Southwestern and Southern States. Will also exchange rare lepidoptera for entomological literature. Levi W. Mengel, Reading, Penn.

Wanted to exchange—Medical books, Obstetrical Transactions, London, Works of Sir J. Y. Simpson, Beck's Medical Jurisprudence. Handbook for the Physiological Laboratory, by Burnton, Foster, Klein and Sanderson, Quain's Anatomy, and about fifty others. Catalogues given. Want Geological, Botanical and Microscopical books in exchange. Dr. A. M. Edwards, 11 Washington St., Newark, N. J.

Wants.

I WOULD be grateful to receive replies to any of the following questions.—Is copper found native in Mexico? Is it found native in Cuba? If so, in either or both cases can I purchase authentic specimens? Can any one furnish me with results of analyses of native Mexican or Cuban copper, also analyses of unalloyed copper reduced from the ore from Cuba or Mexico? Is it possible to procure aboriginal implements of copper from Cuba or Mexico? Answers to these questions will greatly aid the preparation of a report for a scientific institution. C. B. Moore, 1321 Locust St., Philadelphia, Pa.

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